

REMARKS

This paper is responsive to the Office Action of August 1, 2002. Reexamination and reconsideration of the application are respectfully requested.

Claims 1-19 are pending in the application and are subject to a restriction requirement. The examiner has restricted examination to one of Group I (claims 1-10) or Group II (claims 11-19).

Affirming the provisional election of June 19, 2002, applicants elect claims 1-10, directed to a semiconductor device, with traverse.

The Office Action

Claims 1-6 stand rejected under 35 U.S.C. §102(e) as being anticipated by Gardner et al. (U.S. Pat. No. 6,002,150).

Claims 1-6 and 8-10 stand rejected under 35 U.S.C. §102(e) as being anticipated by Oowaki et al. (U.S. Pat. No. 278,165).

Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Oowaki et al. in view of Raajimakers et al. (U.S. Pat. Application Pub. No. US 2001/0031562A1).

Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gardner et al. in view of Raajimakers et al.

Claim 8 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gardner et al. in view of Xiang et al. (U.S. Pat. No. 5,937,315).

Claim 10 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Gardner et al. in view of Venkatesan et al. (U.S. Pat. No. 5,736,435).

Claims 11-19 have been withdrawn from consideration.

*The Present Claims Distinguish Patentably
Over the References of Record*

Claim 1, as amended, calls for a semiconductor device, which includes a source and a drain, where the **source and the drain consist essentially of silicide** and a gate dielectric made from a high-K material (e.g., a material having a relative permittivity of greater than 10).

Gardner et al. fails to disclose or fairly suggest a semiconductor device, which includes a source and a drain **consisting essentially of silicide**. In contrast, Gardner et al. discloses a source/drain having a silicide contact formed on the upper surfaces of the source/drain. In other words, the source/drain (120/126) include a silicide layer (132), but do not consist essentially of silicide. In fact, at column 8, lines 52-53, Gardner et al. teaches away from the present invention, as claimed, stating that, "as a result, the lightly doped drain regions may be substantially free of metal silicide."

Oowaki et al. fails to disclose or fairly suggest a semiconductor device, which includes a source and drain consisting essentially of silicide. Paragraph 12 of the Office action states that, "Oowaki discloses that the source and drain can be silicided (column 6, lines 12-15)." However, applicants respectfully submit that the Office action's reliance on Oowaki et al. is improper. At column 6, lines 12-15, Oowaki et al. discloses:

[i]t is also possible to prevent the junction leak, which is caused by the intrusion of silicidation to the junction surface, from being caused when a silicide of nickel (Ni), titanium (Ti) or the like is formed. (Emphasis added).

Not only does the above-quoted portion fail to disclose or fairly suggest the claimed invention, it teaches away from a source/drain consisting of a silicide. In other words, at column 6, lines 12-15, Oowaki et al. teaches that the intrusion of silicidation into the junction surface (which applicants and other skilled artisans understand to mean the source/drain junction surface)

is to be prevented or otherwise avoided. The other cited references, including Xiang et al., Raajimakers et al., and Venkatesan et al., fail to cure the deficiencies of both Gardner et al. and Oowaki et al. Accordingly, it is submitted that **claim 1** and **claims 2-10 and 20**, dependent therefrom, distinguish patentably over the references of record. In addition, the dependent claims recite additional novel and unobvious features of the invention.

For example, newly added **claim 20** recites that "a source/body junction is defined by silicide material of the source and semiconductor material of the body and a drain/body junction is defined by silicide material of the drain and semiconductor material of the body." None of the cited references, taken alone or in combination, disclose or fairly suggest these features. In fact, Oowaki et al. explicitly teaches away from such these features.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §102(e) and §103(a) is requested.

Drawings

Formal drawings (FIGS. 1-3C) were filed along with the application on January 11, 2002. While no objection to the drawings has been issued by the Examiner, the acceptability of the drawings has not been indicated. An early indication of the acceptability of the drawings is requested.

Conclusion

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

Serial No.: 10/044,493

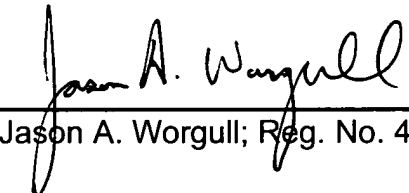
If there are any fees resulting from this communication, please charge same to our Deposit Account No. 18-0988, our Order No. G0615.

Respectfully submitted,

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Date: September 13, 2002

By



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APPENDIX A
RESPONSE TO OFFICE ACTION DATED AUGUST 1, 2002

Applicant: Bin Yu, et al
Serial No.: 10/044,493
Filed: January 11, 2002
Title: SEMICONDUCTOR DEVICE WITH SILICIDE
SOURCE/DRAIN AND HIGH-K DIELECTRIC
Examiner: Kevin V. Quinto
Docket No.: G0615

Art Unit: 2826
Confirmation No.: 9266

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A marked version of the amended claim appears below (deletions bracketed and struck through and additions underlined):

1. (amended) A semiconductor device comprising:
a ~~[silicide]~~ source and a [silicide] drain, said source and drain consisting essentially of silicide;
a semiconductor body disposed between the source and the drain;
a gate electrode disposed over the body and defining a channel interposed between the source and the drain; and
a gate dielectric made from a high-K material and separating the gate electrode and the body.

20. (new) The semiconductor device according to claim 1, wherein a source/body junction is defined by silicide material of the source and semiconductor material of the body and a drain/body junction is defined by silicide material of the drain and semiconductor material of the body.
